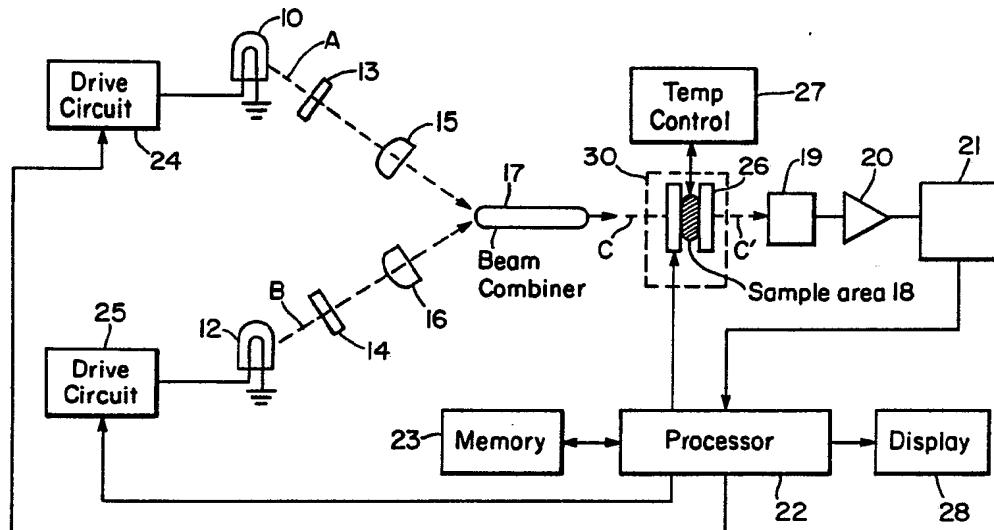


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(57) Abstract

To determine glucose or other constituents of the human or animal body, near-infrared radiation containing two alternating wavelengths that have equal extinction coefficients in the tissue is directed onto a sample area of the body. The intensity relation of the two different wavelengths is adjusted so as to balance the two wavelength detected signals. The extracellular-to-intracellular fluid ratio of the tissue is changed or is allowed to change, and the alternating component of the transmitted beam power is measured. The amplitude of the alternating-current (AC) signal given by the detector represents glucose concentration or the difference from a preset reference concentration.

